# INSTRUCTION

## INSTRUCTION FOR RETROFITTING CIRCULATION SYSTEM FW-E40, FW-E 60 USING MODULE Z4

FOR OPERATORS AND SPECIALISTS
PLEASE READ BEFORE INSTALLATION!

FW-E40

FW-E60

MODULE Z4

STAND 04/2026

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# Safety instructions

These instructions are part of the product and contain basic instructions and important information on safety, installation, commissioning, maintenance and optimum use of the appliance.

- Read carefully before use.
- Store during the service life of the product.
- Make it accessible to operating, maintenance and service personnel at all times.
- Pass this on to any subsequent owner, operator or user.

Please also observe the accident prevention regulations applicable in the respective countries, the relevant standards and regulations and the installation and operating instructions for the additional system components. Installation, electrical connection, commissioning and maintenance of the device may only be carried out by a qualified specialist.

**For the operator:** Have a technician give you detailed instructions on how the controller works and how to operate it. Always keep these instructions near the controller.


**For further information on commissioning and using the system, please refer to the enclosed operating instructions „Fresh water Controller SFWC“.**

## Symbols

Warnings are used in these instructions to warn against damage to property and personal injury.


**Failure to observe these instructions may result in life-threatening effects due to electrical voltage.**


**Failure to observe these instructions can result in serious health consequences such as scalds and even life-threatening injuries.**


**Failure to observe these instructions may result in the destruction of the appliance, the system or environmental damage.**


**Information that is particularly important for the function and optimum use of the appliance and the system.**

## Security measures

Materials and components used on site must be fully suitable for the intended purpose, tested or approved by the manufacturer and must meet the applicable laws, standards, guidelines and regulations.

- Only use appropriate materials and components.
- Do not make any unauthorized changes to the fresh water station.
- The controller of the fresh water station and the pumps are powered by electricity.
- Disconnect the system from the power supply before starting maintenance, servicing and repair work and secure it against being switched back on.
- Keep your workplace clean and free of obstructions.
- Make sure there is sufficient lighting.
- Keep children, pets and unauthorized persons away from tools and assembly areas.
- Store hazardous substances and liquids safely and away from the station area.
- Work on the system should only be carried out by a qualified technician

**During operation**

- If damage occurs to the system:
  - Take the system out of operation.
  - Do not continue to operate the system.

# Safety instructions

**During maintenance and repair**

- Never allow the operator to remove the EPP cover or carry out repairs.
- Only allow repairs to be carried out by a specialist.
- Only use original spare parts.

**Fire protection**

- Observe applicable fire protection regulations and valid building codes/building regulations. This applies in particular in the following cases:
  - When penetrating ceilings and walls.
  - n rooms with special/stricter requirements for preventive fire protection measures.

## Prevention of property damage

**On-site heating system**

- Flush on-site heating systems thoroughly before installing the station.

**Safety equipment in the primary circuit (heating)**

- Observe VDI guideline 2035 (sheet 1 and 2) during planning, installation and operation.
- Plan and install a safety valve in the primary circuit.

**Safety equipment in the secondary circuit (drinking water)**

- Provide a drain pipe for the secondary circuit in accordance with DIN 1988.
- Plan and install a safety valve in the secondary circuit.

**Damage to pumps caused by magnetite deposits**

- Please install a magnetite separator.

**Repairs**

- Repairs should only be carried out by a qualified technician.
- Only use original replacement parts.


**When installing a domestic hot water heating system, the applicable standards, recognized technical rules, and local regulations must be observed! In particular, the hygiene regulations according to DVGW worksheet W551 must be observed when operating a circulation system. Please check whether the use of a safety valve/ expansion vessel in the circulation circuit is required for your specific system! The safety valve and the required blow-off pipe must be installed on site.**

# 2. Assembly and installation

Danger

**Risk of electric shock**

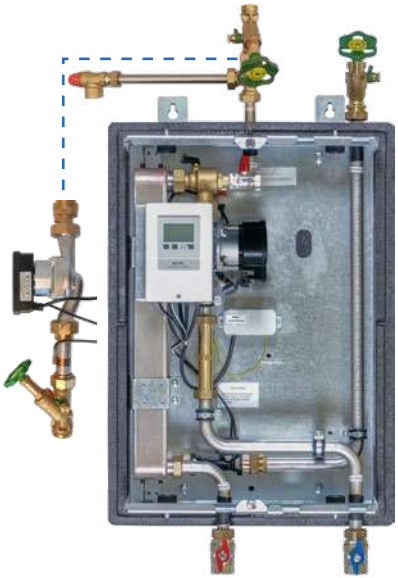
Disconnect the system from the power supply before starting maintenance, servicing and repair work and secure it against being switched back on.

Attention

**To prevent damage to the system, the installation site must be dry, stable and frost-free.**

## 1. Assembly

Install the supplied module Z4 circulation set as shown in the photo. Install the supplied safety valve in the cold water inlet on site.



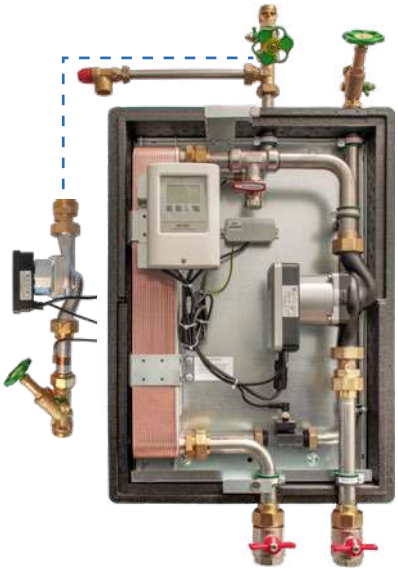
## 2. Installation

Pipe the fresh water station to the system as shown in the figures.

1. **Primary side return:**
   FW-E40: Return to buffer tank, G1" internal thread connection, piping at least DN 25, maximum length 2 m.

   FW-E60: Return to buffer tank, G1¼" internal thread connection, piping at least DN 32, maximum length 2 m.
2. **Primary side supply:**
   FW-E40: Supply to buffer tank, G1" internal thread connection, piping at least DN 25, maximum length 2 m.

   FW-E60: Supply to buffer tank, G1¼" internal thread connection, piping at least DN 32, maximum length 2 m.
3. **Secondary side DHW:**
   Hot water outlet, G1" external thread connection.
4. **Secondary side CW:**
   Cold water inlet, G1" external thread connection.
5. **Circulation:**
   Circulation unit, G1¼" external thread connection.



Attention

**Damage to pumps due to dry running!**

Ensure that the piping is tight.
Ensure that the pump is filled correctly.

Attention

**Damage to pumps due to overpressure!**

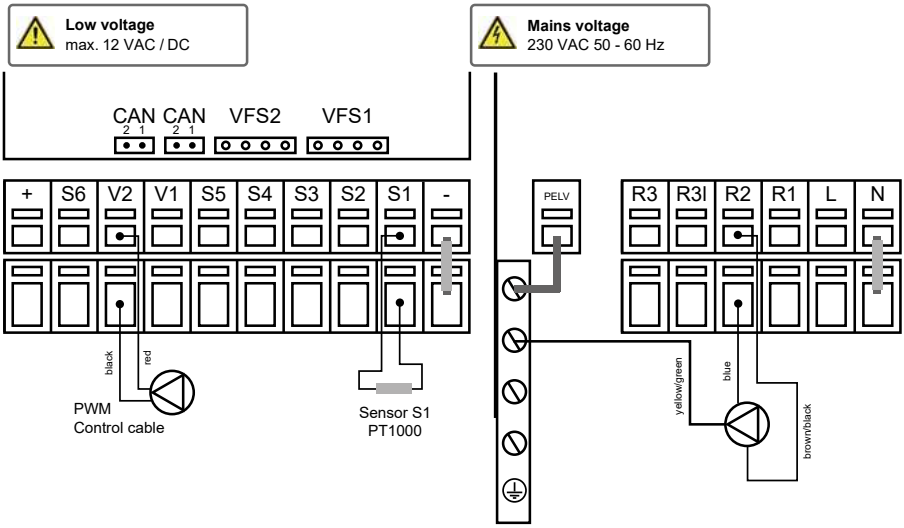
After completing installation, secure fittings with seals to prevent accidental closure.

# 2. Assembly and installation

## 3. Electrical connection Retrofitting circulation set Module Z

**Risk of electric shock**

Disconnect the system from the power supply before opening the controller.




The sensor ground (S1-S6) is connected to the terminal block Sensor - .

| Terminal: | Connection for: |
|---|---|
| S1 | Circulation (opt.) |
| S2 | Cold water (optional, see below) |
| S3 | Primary supply (opt.) |
| S4 | Upper storage tank (opt.) |
| S5 | Middle storage tank (opt.) |
| V1 | 1-10 V / PWM signal for primary pump |
| V2 | 0-10 V / PWM- signal (opt.) |
| S6 | Primary Return (opt.) |
| - | Bridge Sensor - |

| Terminal: | Connection for: |
|---|---|
| L | Mains phase conductor L |
| N | Mains neutral conductor N |
| R1 | Primary pump (opt.) |
| R2 | Relay 2 |
| R3\| | Relay 3 (normally closed) |
| R3 | Relay 3 (normally open) |

The protective conductor (PE) must be connected to the PE metal terminal block!

The polarity of the Pt1000 sensors is arbitrary. Relay configuration depends on the selected additional functions.

Connect the circulation pump:
R = brown,
N = blue,
yellow-green to the PELV connection..

Connect the circulation sensor to S1.

Connect the PWM control strip.
Input = red
Ground (GND) = black

# 3. Commissioning

## 3.1 Checking the installation

1. Completeness of the piping of the fresh water station.
2. Piping for leaks.
3. Correct installation of safety-related components. (see safety instructions page 4)

## 3.2 Filling the primary circuit

1. Observe the non-return valve in the storage tank return.
2. Fill and flush the primary circuit.
3. Fill and vent the buffer tank.
4. Vent the primary circuit at the pump, pipes and buffer tank.

## 3.3 Filling the secondary circuit

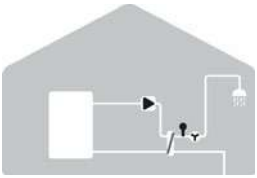
1. Fill and vent the secondary circuit.


**Note: Fill slowly,** and avoid water hammer during filling, as this can damage the vortex sensor.

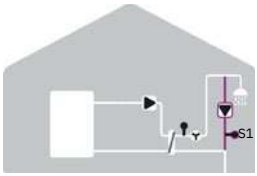
2. Vent the fresh water station by tapping (cold and hot water side).

## 3.4 Commissioning the controller

1. Connect the controller (according to the external instructions for the fresh water controller SFWC).
2. Do not close the shut-off valves between the fresh water station and the safety valves while the primary circuit pump is in operation.
3. Start up the controller (the controller is partially preset at the factory).
4. **Activate circulation mode by resetting the controller to factory settings (6.6). Then disconnect the controller from the power supply for 10 seconds.**
5. After restarting the controller, check all settings such as date, time, circulation times, etc.



Basisschema




Zusatzfunktion Zirkulation
S1 ZirkulationS

## 3.5 Checking the water heating

1. Tap hot water.
2. Check water heating.
3. Check the circulation loop.

## 3.6 Completing commissioning

1. Clean the inside of the fresh water station of any construction dirt.
2. Put the cover on.
3. Clean the outside of the system of any construction dirt.

## 3.7 Handing over the system to the operator

1. Instruct the operator of the system in how to operate the system (in accordance with the operating instructions for the controller). Point out safety and maintenance intervals.
2. Note the parameters set during transfer in the protocol.
3. Pass on all instructions to operators:
   - These installation and operating instructions
   - Operating instructions for SFWC fresh water controller

# 3. Commissioning

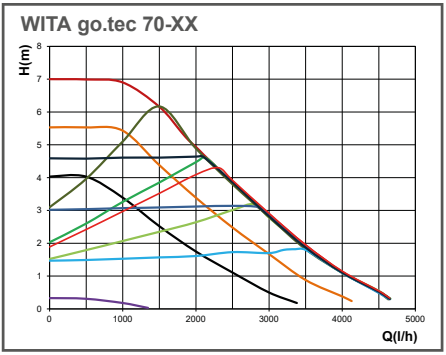
## 3.8 For the operator

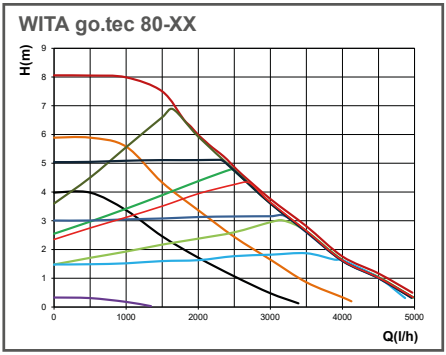
Attach all instructions at the installation site of the fresh water station or keep them near the fresh water station.

## 3.9 Operation

Operate the system according to external instructions for controllers.

## Technical Operating Data for the Pump




| | 70-XX | 80-XX |
|---|---|---|
| **Maximum head** | 7.0 m | 8.0 m |
| **Maximum flow rate** | 4000 l/h | 4500 l/h |
| **Power consumption P1 (W)** | 4 - 65 | 4 - 80 |
| **Supply voltage** | 1x 230V 50 Hz | |
| **Emissions sound pressure level** | < 43 dB(A) | |
| **EEI** | ≤ 0.21 | ≤ 0.21 |
| **Thermal class** | TF110 | |
| **Ambient temperature** | 0 °C to 60 °C | |
| **Media temperature** | -10 °C to 110 °C | |
| **System pressure max.** | 10 bar (1MPa) | |
| **Approved pump media** | Heating water in accordance with VDI 2035<br>Water/glycol mixtures 1:1 | |

The following table applies to the pump models go.tec 40-XX/60-XX/70-XX/80-XX:

Inlet pressure

| Fluid temperature | Minimum inlet pressure | | |
|---|---|---|---|
| < 75 °C | 0.05 bar | 0.005 MPa | 0.5 m |
| 75 °C - 90 °C | 0.3 bar | 0.03 MPa | 3.0 m |
| 90 °C - 110 °C | 1.1 bar | 0.11 MPa | 11.0 m |

Permitted scope of use

| Temperature range at maximum ambient temperature | Permissible fluid temperature |
|---|---|
| 25 °C | -10 °C to 110 °C |
| 40 °C | -10 °C to 95 °C |
| 60 °C | -10 °C to 70 °C |

**NOTE**

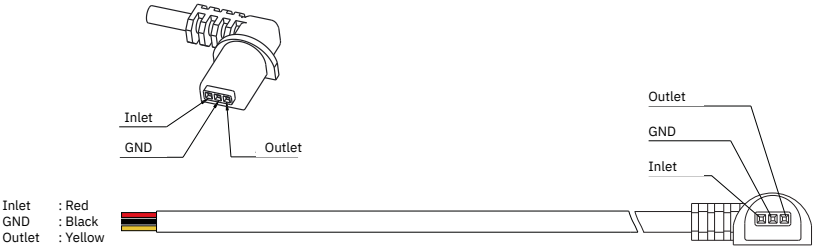
Warning!
Using prohibited fluids can damage the pump and cause personal injury. Be sure to follow the manufacturer's instructions and consult the safety data sheets!

# 3. Commissioning

## Technical Operating Data for the Pump

### PWM Function

This function allows the pump speed to be controlled by an external controller. To use this function, the pump must be equipped with a corresponding input.
This external input is identified by an additional three-pin connector, to which a compatible external controller can be connected.
The pin assignment is shown in the following figure:




The maximum cable length is 3 m.

The signal line is electrically isolated from the pump electronics by an optocoupler.

The remote unit to be connected:

- must reliably prevent direct contact between the user and the cable conductors when installed, i.e., the terminals must be touch-proof and the terminal connections must be protected against accidental contact by a permanently mounted cover.
- must comply with Protection Class I (connection with protective grounding). The device must not be put into operation before the PWM signal has been properly connected.

**Warning: To prevent damage to the pump, the PWM signal cable must never be connected to 230V!**

The open-collector PWM output must be connected to the evaluation electronics via a suitable pull-up resistor. The operating voltage must be below 24V.
To maintain a current of 1 to 2.5 mA, the resistance of the pull-up resistor R should be within the following range in kΩ (assume U to be the pull-up voltage in volts):

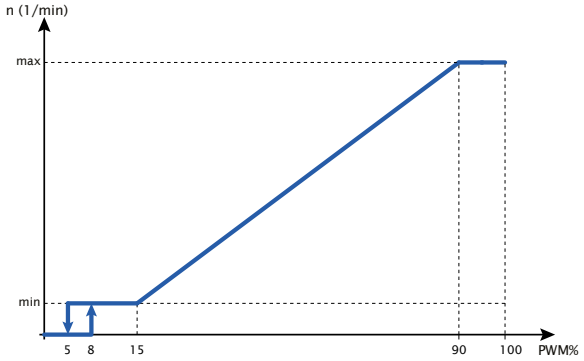
$$\frac{U}{2.5} - 0.11 \leq R \leq U - 0.11$$

Recommended pull-up resistors for various voltages:
3.3 V → 1.21 kΩ - 3.19 kΩ
5 V → 1.89 kΩ - 4.89 kΩ
15 V → 5.89 kΩ - 14.89 kΩ

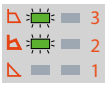
# 3. Commissioning

## Technical Operating Data for the Pump

For safety reasons, the pump stops when the PWM signal is between 0% and 5%. If the PWM signal is interrupted—for example, due to a controller malfunction or a broken cable—the pump stops to prevent overheating. In the range between 5% and 8% of the PWM signal, hysteresis prevents the pump from constantly cycling on and off when the PWM signal fluctuates around the switching point.




| PWM input signal (%) | Pump status |
|---|---|
| 0 | No PWM signal input. The pump is controlled internally. |
| 0 < PWM ≤ 5 | Standby mode: off |
| 5 < PWM ≤ 8 | Hysteresis range: on/off |
| 8 < PWM ≤ 15 | Pump operates at lowest speed |
| 15 < PWM ≤ 90 | Pump operates at variable speed. The speed varies linearly with the PWM input signal. |
| 93 < PWM ≤ 100 | Pump operates at highest speed |

| Icon on the display screen | Description |
|---|---|
|  | PWM2 mode. If there is no input signal or PWM%=0%, the S icon (bottom left) flashes |

# Notes

# Notes

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**Presented by:**